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THREE CASES OF CRANIOTOMY.

[Read before the Boston Society for Medical Observation, and communicated for the Boston Medical and Surgical Journal.]

BY HENRY L. SHAW, M.D.

CASE I.—Ellen C., aged 35; Irish; fourth child; below the ordinary stature, and of delicate build. This patient did not go to the full term of pregnancy. From the data she gave me, which appeared to be correct, she was nearly eight months advanced. While carrying this child she has worked harder than usual; she attributed her premature sickness to a hard day's washing. Her previous labors have been natural, and the children healthy. Labor commenced Dec. 1st, at 8, P.M. The membranes ruptured at 11½, P.M., as I learned from the midwife in attendance. There was but a small quantity of liquor amnii. Since the rupture of the membranes, the patient had been upon the floor, where the nurse had been trying to deliver by the arm, which was presenting. My first visit was Dec. 2d, at 2, A.M. She was then much fatigued from the severe pains, together with the violent efforts which had been made by the midwife to force a delivery. The os was large enough to admit the hand, not very soft; the head was presenting above the brim, the face towards the right side. The left arm, quite cold, was also protruding into the vagina. Whether this was the presentation, or attempts had been made to draw the hand down, could not be ascertained. The vagina was extremely hot. On examination over the abdomen, no signs of foetal life could be detected. The woman, herself, had not perceived motion for several days. Her pulse was high, and she complained of headache. The pains, from the commencement, had been regular and powerful.

After having examined into the condition of the bladder and bowels, the woman was placed in position preparatory to turning, on the left side across the bed, the knees supported by an assistant. Whilst the right hand was used to support the uterus, the left was free for manipulation. The hand was carried through the vagina

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and into the os with ease; but before a foot could be grasped, pains of the most violent kind came on in rapid succession, during an interval of which a foot was seized, and several efforts made to turn. By this time, which occupied several minutes, the hand was so completely paralyzed as to render it useless, and it was withdrawn. The pains in this case, as has been frequently noticed in turning, came on with renewed intensity as soon as the hand passed through the os, and seemed to abate almost immediately on its withdrawal. During this time I ascertained that the placenta was entirely detached. After a short respite, a second trial was made; the child could be rotated, but all efforts at version were fruitless.

As a long time had elapsed since the rupture of the membranes, the obstacle to turning was attributed to the severe pains, which had materially reduced the size of the uterus. A more careful examination was now made, and the cause of the delay easily accounted for: the head proved to be much enlarged; the sutures were not separated, as is usual in hydrocephalus. The anterior fontanelle was full, and fluctuated on touch. There was also a marked bulging of the frontal eminences. As the diagnosis was now certain, craniotomy was, of course, the only expedient. Dr. Damon was called, and preparations made for the operation. After an hour's unavoidable delay, the woman was etherized and placed in the usual position. A pair of straight scissors were carried up to the head (the fingers of the left hand acting as a sheath), and the parietal bone opened. As soon as the instrument had penetrated the dura mater, it was followed by a copious gush of water, estimated at about a pint. The scissors were carried to the base and the brain well cut up, when they were withdrawn, accompanied with a marked collapse of the head. Short forceps (being the only ones at hand) were applied, but as they slipped upon every effort at traction, the child was turned and delivered. The placenta, which was perfectly bloodless, was also removed. As the pains were now feeble, although there was less than the usual amount of hæmorrhage, hardly enough to soil the hands, ergot and stimulants were administered. The uterus continued large and uncontracted (despite the usual remedies, which were assiduously persevered in) for more than two hours, when it had decreased enough to render it safe to leave her.

2d.—Passed a good night. Pulse 75; tongue looks well; uterus continues unusually large; abdomen tympanitic. Complaints of after-pains. Has had beef-tea and gruel.

3d.—A good night. Uterine tumor decreasing; abdomen still tympanitic. Complaints of headache; breasts active; lochia moderate; pulse 80. Ordered ol. ricini and ol. terebinth.

4th.—Found her reclining in bed. Pulse 72.

6th.—Four days after delivery, around the house.

From this date nothing unusual occurred. The child, a male,

was larger than the average, and had an atrophied appearance. The circumference of the head, when collapsed, was seventeen inches. The bones were but partially ossified. The frontal eminences were very prominent. The anterior fontanelle was large; the posterior could not be detected. The sutures, as before stated, were no wider than usual.

CASE II.—Mrs. W., Irish; aged 23; domestic; primipara; very short, and of a stout build. Was first called to her on the evening of Jan. 26th. Slight labor pains had come on a few hours previous. On vaginal examination, the os was found to be about two thirds of an inch in diameter, soft and elastic, the head high above the brim, scarcely within reach of the finger. As she was evidently in the commencing stage of labor, I left, with directions to be sent for when the pains were more urgent.

Jan. 27th.—Was called very early in the morning, and went immediately for a student, with whom the case was left in charge. In the evening was called again. The pains had continued somewhat irregularly throughout the day; the os had increased a little in size. The exact position of the head was not made out. The vagina was moist; bowels had been freely moved from oil taken in the morning; urine had been voided. Pulse good. As everything appeared favorable, I left, telling the student to call me if he thought it necessary.

I heard nothing more of the case until the 29th, at 4, P.M., when the gentleman said he would like to be relieved. From him I learned that the pains had been irregular the day before, until 5, P.M., when the membranes ruptured. From that time they had been regular and expulsive. On vaginal examination, the os was found about double the size of a Mexican dollar, very soft and elastic, and but loosely enveloping the head, which still remained, as previously described, above the brim. The head was very hard and unyielding, and was soon recognized as the cause of the delay. The vagina was hot and dry; bladder much distended. The catheter was used, and about a pint of urine drawn off. After this, the pains, which had all day been good, seemed to assume, if possible, renewed intensity.

9, P.M.—Uterus still acts well. No progress has been made, and the woman shows signs of exhaustion. Headache; abdomen tympanitic; pulse 100. I began to think of the forceps, and although the condition of the head rendered their use of doubtful propriety, it was thought best to make a trial, and if found impracticable they were of course to be abandoned. Dr. Coolidge was sent for, and after an examination we concluded to apply them immediately. The woman having been placed in the usual position, many ineffectual efforts were made. They were introduced easily, but all attempts at locking them were of no avail, and after an unusually long trial they were given up. As the patient showed no urgent signs for ac-

tion, we waited. At 12 o'clock the pulse was a little over 100; the whole surface covered with profuse perspiration; vagina becoming hotter. On examination over abdomen, no signs of fœtal life could be detected. At 3, A.M., administered a full dose of opium, and left her.

6, A.M.—During absence has slept considerable, the uterus acting but feebly until now; the pains were nearly gone. The forceps not being applicable, two methods of procedure remained—turning, and embryotomy; the former of very doubtful propriety, as the membranes had been ruptured thirty-six hours, and provided version could be performed, it would be unsafe to force so unyielding a head through the vagina. Craniotomy was therefore decided upon.

7, A.M.—Pains very feeble; vagina intensely hot and dry; pulse 114. A full dose of eth. tr. ergot having been given, the woman was placed in the usual position. This accomplished, the scissors were carried up to the parietal bone. Great force was used before it could be perforated, and then not until they were applied in several different places; they were finally carried to the base, and the brain well cut up. The head showing no tendency to collapse, a second puncture was made, with no better result. A trephine was now used, and a disk of bone, of considerable size, removed. By the aid of one blade of a pair of bone forceps, the opening was enlarged until both could be inserted, and the rent increased by separating them. Fragments were brought away until the opening was large enough to admit the finger, when much of the brain was removed, but unattended with any diminution in the size of the head. An hour or more was thus spent in bringing away such pieces as could be grasped by bone forceps. The greater part of the frontal and one parietal bone having been removed, the edges of the remaining bones were covered with the scalp. Not succeeding with traction, the hand was introduced, the fingers made to embrace the neck, and after a long effort the child was delivered. The placenta, which for some time had been detached, was immediately withdrawn. The delivery was attended with only the usual amount of hæmorrhage. On examination of the os, a tear of about half an inch in length, and several smaller ones, could be distinctly felt.

11, A.M.—Has rallied well; after-pains are good. A full dose of opium was given, when she was left comfortable.

31st.—Passed a good night; slept well. Pulse 80; vagina very hot; external genitals much inflamed and swollen. Nymphæ show a few patches of commencing ulceration. Abdomen full and tympanitic. Unable to void urine; passed catheter; ordered hop fomentations to bowels; beef-tea and gruel *ad libitum*; perfect rest; laudanum at night, if necessary.

Feb. 1st.—Had a good night's rest. Did not take opiate. Says she feels well; no headache; abdomen continues very tympanitic.

nitic; slight tenderness on deep pressure over uterus. Has voided urine. Skin warm and moist; lochia abundant; pulse 76.

2d.—Another good night. Skin moist; breasts active; lochia foetid; pulse 100, accelerated from excitement, there having been a disturbance in the room. Ordered a vaginal injection of warm water; broth and toast.

3d.—Had a good night, but some headache on waking, which soon passed off. Pulse 90. No dejection since delivery. Ordered ol. ricini and ol. terebinth.

4th.—A good night. Has had a free dejection. Abdomen less tympanitic; pulse 86.

5th.—Pulse 84; improving generally. 6, P.M.—Called in haste; has been in great pain for several hours, caused by inability to void urine. Drew off nearly a quart.

6th.—Pulse 76; improving fast.

7th.—Eighth day after delivery. Has had steak and toast. About the house. Pulse 68. Complains of pain in the lumbar region.

I have seen her several times since; she appears quite well. The child, a male, weighed about ten pounds. The bones were unusually firm, and the skull completely ossified.

CASE III.—Julia G., aged 25; Irish; rather a delicate-looking woman; second child. Her previous labor was tedious, and forceps were used. The present labor commenced Feb. 23d, at 11, A.M. A midwife had been in attendance until I was called on the 24th, at 6, A.M. The pains had been good for the last ten hours. The membranes were said to have ruptured at 9 the evening previous. Pulse 95, weak; tongue dry and covered with a thin, brown coat; surface warm and moist; pains fair; feels exhausted. On vaginal examination, the head, with the face looking posteriorly, was found impacted high up in the vagina. The os could not be felt. The vagina was hot and dry; external genitals swollen; rectum empty, and bladder distended. On abdominal examination, no signs of foetal life could be detected. Has had copious bilious vomiting for several hours. Drew off about two thirds of a pint of urine, and administered whiskey.

9½, A.M.—Pulse 98. The head remaining the same, it was deemed proper to apply the forceps. The woman was placed upon the floor, as they had no bed. The application of the forceps was very difficult; the head was so firmly impacted as to hardly admit both blades; they were at last placed over the ears, as was ascertained afterwards. All justifiable force was used in trying to deliver, but without avail. The head was perhaps slightly advanced, but could not be made to traverse the vagina without causing serious injury to the soft parts.

Convinced of the impossibility of delivering, except by craniotomy, it was assented to, after a long pleading, if, after the expiration of an hour, no progress was made. As the child was probably

dead, the safety of the mother required that she should be delivered in the manner least likely to render convalescence tedious. Ergot having been given, the woman was placed in the usual position. The parietal bone was perforated, followed by a marked collapse of the head. The crotchet was then introduced, and the child delivered. The placenta was easily withdrawn. The child weighed about ten pounds. The head was larger than the average, the bones firm and unyielding. Over the posterior part of the sagittal suture, there was a tumor as large as a good-sized hen's-egg.

11½, A.M.—Pains very feeble, but the uterus well contracted. Feels very much exhausted. Ordered whiskey. 6, P.M.—Pulse 88, weak. Had several hours' good sleep; has taken gruel and whiskey.

26th.—9, A.M.—A restless night. Abdomen much swollen and tympanitic; considerable tenderness on deep pressure over uterus; lochia scanty; external genitals much swollen; pulse 84.

27th.—A good night. Breasts full; abdomen as yesterday. Complains of after-pains. No dejection since delivery. Pulse 80. Ordered castor oil and turpentine.

28th.—A good night. Pulse 72. Had a free dejection. From this date my attendance discontinued.

RESULTS OF THE OPERATIONS FOR THE RADICAL CURE OF CON-
GENITAL HERNIA, REPORTED IN THIS JOURNAL JUNE 4, 1863.

BY DAVID W. CHEEVER, M.D.

[Communicated for the Boston Medical and Surgical Journal.]

At the last meeting of the Society for Medical Improvement (Sept. 28th), Dr. Cheever exhibited to the members a boy, 12 years of age, who was operated on for congenital hernia by Wood's method, last April, and who was, to all appearance, cured. It may be remembered that of the three cases reported in the JOURNAL, one failed at the outset from ulceration of the sutures on the fifth day; the other two were progressing favorably two months after the operation. Dr. C. gave a brief abstract of their continued improvement since that time. The first case, operated on by Gerdy's method, was left, with the skin of the scrotum firmly invaginated, the testicle a little enlarged, and the inguinal canal filled with a dense deposit; there was no bulging at the internal ring. The boy had constantly played about since that time, and had *never worn any truss since the operation*. At the end of six months he was every way as well; there was not the slightest bubonocoele, and it seemed very improbable that the great thickening in the inguinal canal would ever give way again.

The second case, operated on by Wood's method, was allowed to sit up three weeks after the operation. The hernia remained up,

and there was some induration along the inguinal canal. After he had been up a fortnight, a slight protrusion was noticed at the internal ring. Examination by the finger revealed the external ring reduced in size about one half, with firm, sharp and defined edges, showing it to be the result of actual approximation of its walls. There was considerable thickening of the scrotal fascia and cellular tissue. He was advised to wear a truss with a weak spring and flat pad, for some weeks. Within a few days after putting on the truss he left it off for several days while moving about, and the hernia did not come down. It has never come down since. He wore the truss at first pretty continuously, then rarely, and for the last month not at all. Being an active boy, he disliked the truss, and shirked putting it on when he could. During the last few weeks he has done heavy work, assisting in putting in coal, &c., without truss, and with no feeling of weakness in the groin. He therefore considers himself well, and certainly seems so. When shown to the Society, the cicatrices of the operation were but faintly visible, the parts somewhat thickened, and not the slightest bubonocoele. It is now six months since the operation.

These cases were operated on with silver wire, and Dr. Wood now gives that the preference over silk or hempen sutures. The instrument used was not unlike an aneurism-needle, somewhat sharpened, and with the eye at the point.

Dr. C. also alluded to the excellent monograph on Hernia, recently published by Dr. Wood, in London.* This is profusely illustrated; and by this means the author makes clear—what is always so difficult to make out from descriptions—his method of operating for the cure of rupture. Dr. Wood gives the result of his operation in sixty cases. There was but one death, and that from pyæmia. There were 42 cures, or about 70 *per cent. of successful cases*. Some of these cases were in children, but many in adults. Some of the latter worked as sailors, coal-heavers, dock-laborers, &c., without trusses, one year after the operation. This method has also the advantage of rendering a truss more efficient, even if it does not cure the hernia by the operation itself. For it draws the walls of the canal together, instead of spreading them open by invaginated skin, or by plugs, as other methods of operating do. In his work Dr. Wood has introduced many modifications of his operation, according to circumstances. But the essential principle is the same, viz.: *to close the inguinal canal by approximation and inflammatory adhesion of its walls, both the rings being also drawn together*; and this certainly seems the most reasonable method of attempting a radical cure.

* "On Rupture, Inguinal, Crural and Umbilical; the Anatomy, Pathology, Cause and Prevention; with new Methods of effecting a Radical and Permanent Cure. By John Wood, F.R.C.S., &c. London. 1863."

POISONING BY VANILLA-ICE.

Translated for the Boston Medical and Surgical Journal from the Allgemeine Wiener Medizinische Zeitung.

At the session of the Imperial and Royal Society of Physicians, on the third of July, Prof. Schroff related a case of poisoning by this substance, which was of all the more interest from the fact that a similar poisoning had recently taken place in Vienna, which had affected a person of high standing, and which had been several times mentioned in the public journals. Some years ago, at a time when sporadic cases of cholera were of frequent occurrence in certain portions of Vienna, a similar case of poisoning by vanilla-ice happened in the Imperial Opera.* The thorough investigation which was instituted at that time was followed by no result. Both the mode of preparation and the ingredients of the ice, in the celebrated shop in which it was prepared, were found to be free from all fault, so that no trace of the origin of the poison could be detected.

About eleven years ago, a similar case of poisoning was much talked of. At that time, also, the investigation of a commission, appointed by the Minister of the Interior expressly to examine the case, was of no avail. This want of any positive cause of the symptoms, among which vomiting and pain in the gastric region are the most prominent, led Schroff to the idea, that the evil effects of the vanilla-ice might perhaps be connected with the mode of treatment of the vanilla pods on the part of the cultivators in South America and Mexico, before becoming an article of commerce, an hypothesis which is highly probable. In order to preserve these pods in a soft and pliant condition, the producers are accustomed to rub them with various oils, among others with Acajou oil. This is prepared from the seeds of the *Anacardium occidentale* or *orientale*, which is enclosed within a nut-like receptacle. The oil itself, when pressed from the pure seed, is of the finest sort, but the receptacle, which has several cavities, contains a resinous fluid, which being rubbed upon the skin, produces, in the same way as cantharides, burning and vesication. Degener, who has prepared two kinds of ethereal oils from this resin, calls the stronger cardol vesicans, the weaker cardol irritans. Schroff, by rubbing this oil upon himself, had an opportunity of proving its vesicating properties. Now it is easily possible for the inhabitants, in preparing the Acajou oil, to contaminate the kernel with the above acrid fluids, if they do not open the seeds with proper care. In case now that the vanilla is rubbed with an Acajou oil thus contaminated, it will be easily understood how its use might produce symptoms of poisoning.

Still another explanation of the poisoning might be possibly found in another circumstance; namely, in a certain kind of crystal in the vanilla fruit itself. Schroff gave a detailed phytographical descrip-

* It is the custom in Vienna for servants in livery to offer the ices, for which that city is so famous, to those who choose to buy between the acts at the Opera House.

tion of the *Siliqua Vanilla*, both in its mercantile and pharmaceutical relations. The best variety, the Mexican *Vanilla sativa*, has its upper surface sprinkled with numerous white acicular crystals, composed of benzoic and tonka acids, and on this account the inferior qualities are rolled in benzoic acid in order to give them a better appearance. The microscopic examination of the pods themselves has revealed the following structure. The superficial layer or epidermis consists of cells and cell-nuclei, and in it Schroff discovered broad octahedral crystals, which are simply oxalate of lime. After the epidermis comes the parenchyma, which consists of two layers, one colorless, the other brownish red, in the former of which masses of crystals, with elongated angles, were likewise found. In the deeper layers we arrive at the cells and glands, which secrete the volatile ethereal oil, as well as the resin. With regard to the prismatic crystals above mentioned, it is to be observed that they possess a particular resemblance to those found in the scilla, which, being rubbed upon the skin, produce burning and vesication. This same property is said to belong to these crystals of vanilla when collected and dissolved in water, although according to the opinion of Schroff they consist of oxalate of lime only, like the octahedral forms. On the other hand, in Paris, where the cultivation of vanilla is industriously carried on in the gardens, it is maintained that the acrid substance is situated in the prismatic crystals. If this is really the case, it is conceivable that symptoms of poisoning might arise from the use of vanilla-ice if an excessive quantity of such crystals were present. Schroff believes, however, that of the two hypotheses the first is more probable than the latter.

ON INHALATION OF NITROGLYCERINE.

By JOHN M. MERRICK, JR., WALPOLE, MASS.

VARIOUS experiments have been made by different observers* upon the action of nitroglycerine or glonoine upon the animal economy—the nitroglycerine, or its solution in alcohol, being administered by dropping it upon the tongue—the effects which have been noticed being generally acceleration of the pulse, headache and prostration, and in peculiarly susceptible persons, these symptoms greatly aggravated.

These experiments, though somewhat contradictory, are very interesting, both from a chemical and toxological point of view, but do not touch upon one matter, viz.: the effects of the inhalation of the vapor of glonoine—a subject to which considerable interest must attach itself when we consider the rapidity with which the symptoms develop themselves when only a fraction of a drop is placed on the tip of the tongue.

* Vide Braithwaite's Retrospect of Practical Medicine, Part xxxvii., p. 294.

In preparing a quantity of nitroglycerine in 1859, I met with an accident, the result of which exhibits in a very marked and satisfactory manner the toxical properties of this curious substance, and shows the necessity for extreme caution in handling it, especially when mixed with a volatile and inflammable solvent, as alcohol or ether.

The nitroglycerine was prepared by allowing pure glycerine to drop from a pipette with a glass stop-cock, so adjusted as to allow from fifteen to twenty drops to fall in a minute into a mixture of equal volumes of the strongest nitric and sulphuric acids cooled by very cold water.

In repeated experiments I have found that, in spite of the precautions taken to cool the acids, it is impossible to avoid an accident now and then, since, when the action reaches a certain intensity, just as in the oxydation of uric acid or cotton, the experiment ends in an explosion or a violent evolution of nitrous fumes. When such a result occurs in making glonoine, the bystander seldom escapes a severe headache, even though the experiment be conducted in the open air.

After glycerine equal to half the bulk of the mixed acids had been dropped in, the whole was thrown into a large volume of cold water, thoroughly washed, drawn off with a pipette, dissolved in ether, and the ethereal solution evaporated on a water-bath. It was in this part of the preparation that the accident occurred which enables me to speak of the consequences which follow the inhalation of the vapor. The glass dish in which the evaporation was being conducted, by some mishap tipped over, spilling half its contents on the hot copper bath, and in a moment the room was full of the mixed vapor of nitroglycerine and ether. Although I stood directly over the water-bath to adjust it, and must have inhaled a large volume of the mixed vapor, no instant bad result followed, but in less than fifteen minutes a headache set in, slight at first, but increasing in intensity by degrees, until in an hour and a half it became almost intolerable. It was accompanied by a good deal of faintness and exhaustion, intolerance of light, and a feeling of great general distress and alarm, in addition to the racking pain. Relief was only obtained at length by the inhalation of a large quantity of ether, the insensibility produced by which was followed by broken and disturbed sleep, lasting until the following day, which was marked by weakness, exhaustion and slight headache. These unpleasant symptoms did not finally disappear for three or four days.

It may be remarked that, during all the time that the severe pain and distress lasted, consciousness was never lost for an instant. In Mr. Field's case,* *two drops* of a solution containing only one drop of glonoine to ninety-nine of rectified spirit produced loss of consciousness and other very alarming symptoms of narcotic poisoning.

* Vide Braithwaite *ut supra*.

The effects of glonoine upon different individuals are exceedingly different and contradictory. Two drops of a diluted solution containing only one drop of nitroglycerine in ninety-nine of alcohol produce alarming symptoms of poisoning in one person, while another swallows two hundred drops of a similar solution with no other ill effects than a slightly "muddled" feeling in the head. I have experienced unpleasant feelings from tasting exceedingly minute quantities of pure nitroglycerine, such as headache, buzzing in the ears, with a feeling of nervousness and depression, although the action of the drug does not seem to be nearly so powerful or so rapid as when given in the form of alcoholic solution. Pure nitroglycerine is volatile at ordinary temperatures—a fact which was accidentally discovered in drawing off with a mouth pipette some nitroglycerine which had just been washed with water. Headache and the usual symptoms immediately set in, though not a particle of the liquid touched my mouth or tongue.

The following experiment, which shows that some constitutions are susceptible to the action of only one fortieth of a drop of glonoine, was made with a solution of nitroglycerine containing two and one half drops of the pure substance to ninety-seven and one half of alcohol. The solution was dropped upon sugar, and the sugar allowed to dissolve on the tongue.

My general health being good, and my pulse being seventy-nine, about two and one half hours after a full meal, I took *one* drop of the solution. In two minutes my pulse was ninety-four, with dull, throbbing headache; in five minutes the pulse was one hundred, the headache changing from the back to the front of the head; in ten minutes the pulse was down to eighty-eight, and in fourteen minutes back to its normal rate, seventy-nine, although the headache did not wholly pass off for fifteen minutes more. It will be noticed that a quantity of the solution was taken, equal to only one fortieth of a drop of pure nitroglycerine.—*American Journal of Science and Arts.*

ON THE FORMATION OF MUCUS AND PUS.

By THOMAS K. CHAMBERS, M.D., HON. PHYSICIAN TO H.R.H. THE PRINCE OF WALES,
PHYSICIAN TO ST. MARY'S AND THE LOCK HOSPITALS, &c.

In the vitalized forms which they present, we may consider pus and mucus as identical; the pus-globule being merely the descendant, more or less remote, of the mucus-globule, and both retaining only that low degree of life which they originally derived from the body. The physical differences between the two depend seemingly upon the medium in which these vitalized forms are suspended. Neither in pus nor mucus are the contents of this medium constant in their proportion to one another; no two analyses of pus or mucus are ever the same.

Indubitable pus and indubitable mucus may be clearly defined as the two ends of a scale, between which there are innumerable gradations. The most transparent, stringiest, and least globular mucus consists principally of a peculiar animal matter, which is not albumen, though it closely resembles it. It is not coagulable by heat, and it contains more oxygen on ultimate analysis than albumen does. Sulphur also appears not to be one of its constituents. Until it can be found reducible to be considered a compound of some known intermediate substances, it is temporarily called "mucin." This word simply means mucus divested of those contents which are capable of another nomenclature and physical separation—as, for instance, epithelium-scales, blood, the ammonia of decomposition, &c. The analyses are well known, being reprinted in every work of physiological chemistry, but shed little light, for the obvious reason that the substance analyzed is hardly ever twice the same.

Pus, on the other hand, contains a large quantity of albumen and a large quantity of fat. A modification in the mode of the loss of health is characterized by the presence of fibrin, and certain forms of defective vitality by casein being found. The inorganic constituents of both seem to be the same as those of blood-serum with some of its water lost. Our diagnosis, then, of the morbid secretions of the mucous membranes should not be absolute—not that such and such a specimen *is* pus or *is* mucus—but comparative, that it is *more or less* purulent, according as it exhibits a greater or smaller quantity of albumen; a fact easily ascertained by the degree of its coagulation by heat when diluted with water. And this is thoroughly practical and important, for it indicates the degree of loss of local vitality in the secreting membrane. Equally practical, also, and important is the observation of the presence of fibrin and its amount. In large and overwhelming quantities we are familiar with it as occurring in the most serious deficiency of life consistent with life at all which we find in mucous membranes; and there appears even in minor cases a close connection between its amount and the degree of deficient vitality or inflammation. During a severe cold in the head minute clots of spontaneously coagulating fibrin may be found in the secretion of the Schneiderian membrane, which, existing in large quantities, form the false membrane indicative of the serious poisoning of the system in diphtheria and croup.

The phenomena we see on the mucous membranes are a question of degree rather than of essential difference.

Loss of vitality, as shown in mucous membranes, seems to be exhibited in the following degrees.

First, there is an *arrest of function*. For example, from the impression of cold the Schneiderian membrane is temporarily deprived of its endosmotic force; it ceases to absorb the water which is condensed on its surface from the breath, and that water drips from the nostrils. Or the stomach or intestines, from mental or physical

causes, are deprived of their power of absorbing and digesting the fluid matters presented to them, and partially first excreted from them; and these fluids may pass away by diarrhœa. Or the skin is chilled, and shows its deficient vitality chiefly in the deficiency of its most prominent function; though it feels painfully, it cannot feel so delicately as it ought. In a vigorous person full life is soon regained; the nose recovers its natural degree of dryness; the intestines absorb again before the fluids have passed from the body, and the temporary indigestion does not arrive at diarrhœa; the skin recovers its feeling after a temporary painfulness. But we know that our invalid patients, whose vitality is low, are not so easily reinstated. Catarrh of various parts quickly and readily follows the action of physical agents. It is probable that in this least degree of injury the capillaries are contracted in area, and consequently the rapidity of their stream increased, by the action of the nerves. This phenomenon is wanting if the injury is greater; in experiments upon animals the microscope does not detect it, if the reagent applied is powerful.

2. A greater degree of injury is accompanied by a loss of elasticity in the capillaries. Their dilatation, and the consequent retention and stagnation of the blood in them, is familiar to us all, in both the living and dead subject, as "*inflammatory congestion*."

3. This stagnation may be in isolated spots complete; the blood-discs adhere together in rolls, as when removed from the body, and block up the passage. Thus the arterial wave is obstructed in its course, and like an ocean-swell shattered against a shore of rocks becomes more evident to the senses as the well-known "*throbbing*." It is shortened and sharpened, but there is no evidence that it is strengthened; indeed, the analogy I have cited, and the general fact of weakness being accompanied by quickened pulse, would seem to show that it is diminished in propelling force.

In the mean time there is an accumulation of that constituent of the blood which most resembles in appearance the element of young growing tissue—the colorless blood-corpuscles. The blood is dark, indeed, to the naked eye, but under the microscope is seen to be made dark by being filled with these pale bodies, possessing a high refractive power.

The loss of elasticity in the coats of the capillaries renders them more easily permeable by the contained fluid. Serum is poured out into the neighboring parenchyma, and joins with the swollen capillaries in producing "*swelling*." The loss of vitality in the blood-discs may be so complete that their hæmatin is dissolved in the serum, and we get the surrounding parts stained with it—as for a short time in typhus fever, and for a long time in syphilitic eruptions. Or the bloodvessels may completely lose their cohesion and be ruptured, allowing of hæmorrhage. But in all this there is no new process, nothing which is not a direct deficiency of function.

In solid structures this effusion is followed by an endosmotic current of the watery part back again into the circulation, leaving behind it the more solid and coagulable constituents. On free surfaces, covered only by soft open epithelium, the water and salts therein dissolved escape, forming the fluid of the mucus. The elements of new tissue, being there very copious to supply the constant demand for growth, ooze out copiously with the serum, and constitute the mucous globules. They are wasted elements of new growth, not themselves a new creation, or evidences of superadded life.

How do these matters get through the coats of the capillaries? There cannot be holes for their escape, or the blood-discs, which are the smaller of the two, would always escape also. Doubtless this is one of the great riddles of physiology. But I think the art of drawing is in a certain degree responsible for some of the difficulty which it presents to our minds. When we have no means of correcting by our other senses impressions made on the eye, we are too apt to consider everything with an outline as equally solid. The necessarily hard outlines of the engraver express to us forms which may, for all we know, be spheres of cast iron, whereas in truth they are as delicate as aerial clouds. Why may they not pass through tissues, mutually dissolving and dissolved by the materials of those tissues? Just as we see a stratum of fleecy cloud among mountains, or in Turner's pictures, disappear when it comes to a stratum of warm air, and reappear in the same form when it emerges on the other side. To get just ideas of nature, we must look upon solidity as a comparative, not as an absolute, quality.

4. In a higher degree of deficient vitality the serum contains albumen and fat also exuded with it; and this mixed with the multiplied globules constitutes the fluid we call "pus." The albumen and fat not only escape on free surfaces, but saturate also the tissues they escape through, making them more retentive of water than would otherwise be the case. Inflamed cuticle takes a much longer time to dry than normal cuticle. Langhans found that a piece of healthy rabbit-skin was dry in three hours, but a piece of the same which had been inflamed during life took twenty hours to part with its moisture to the same extent. Thus it appears to be saturated with the nutriment which it has lost the power of employing aright.

5. Pus formed as I have described is a soft, greasy liniment, which tends probably to shield the parts with which it lies in contact from foreign influences, which in their condition of lowered vitality would be noxious to them. It is more bland and less liable to decomposition than any artificial application. Kept on the healthy skin it causes less irritation than even water. But under certain circumstances it becomes what we term *ichorous*. In this state it is corrosive, poisonous, and destructive to the neighboring tissues. Now, this cannot arise simply by the chemical decomposition of

the pus itself in consequence of retention, because in a good many cases (as in cancrum oris, for example) it has not been retained so long as usual, but is thrown off ichorous and irritating as it is formed. But you may observe that in all these instances of ichorous pus there is necrosis, mortification, ulceration, or some other form of actual loss of tissue. Tissue may be forming as in granulations, but it is being destroyed at the same time with abnormal rapidity. I cannot but think, therefore, that the ichorous nature of such pus may be due to its saturation with the organic acids which are the results of the decomposition, not of the pus itself, but of the melting tissues. Wash away this irritating pus, clean the sore, and that which is then formed often is quite bland and benignant. As pus differs from mucus, so ichor differs from pus in the nature of its accidental fluid constituents.

The formation of ichorous pus exhibits a further stage of loss of vitality. The poisonous part of it seems to be peculiarly soluble, and capable of uniting with, and destroying, animal tissues. Absorbed into the blood, it naturally destroys the vitality of the constituents of that fluid, causes it to coagulate in localized spots, and thus to give rise to the congestions and abscesses of pyæmia. When we reflect how easily ulcerations may arise in mucous membranes, and what an active surface they offer for absorption, we cannot be surprised at the frequency with which pyæmic abscesses follow slight injuries, such as operations on the bladder, crushing of calculi, typhous inflammation of the bowels—cases which seem of minor moment, but which certainly involve solutions of continuity, with consequent decomposition of tissue and the formation of ichor, in a situation very open to absorption.

6. The formation of fibrinous coats on mucous membranes I have already shown not necessarily to involve destruction of the epithelium. Is the loss of vitality which causes it to exosmose through the capillaries in the fibrin itself or in the walls of those vessels? Whichever it may be, such an exudation certainly is evidence of a great deficiency of life; and, moreover, by the mechanical impediment it throws in the way of the functions, usually leads to further deficiency.—*Lancet*.

THE BOSTON MEDICAL AND SURGICAL JOURNAL.

BOSTON: THURSDAY, OCTOBER 8, 1863.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE STATE OF NEW YORK FOR 1863.—The Annual meetings of the New York State Medical Society seem to be mainly devoted to the reading of papers by the various members, rather than to the discussion of questions of medical ethics, or the cultivation of a friendly intercourse and the maintenance

of a high standard of professional character. These important objects are, of course, not overlooked, but the more strictly scientific exercises, so to speak, of the occasion, seem to predominate. We have, therefore, as the fruit of these meetings, an annual volume of Transactions, made up of the communications presented, all apparently being published which are laid before the Society on these occasions. To us there seems no special reason for giving the patronage of the Society thus indiscriminately, merely because a paper has been read. The result is a volume of very various character, of materials of very unequal merit. Such is the volume of the present year, which contains many valuable and interesting papers, it is true, but some, which, in our judgment, would have found a more appropriate place in the pages of some of the medical journals. The transactions of a State Society should, we think, be mainly a record of the progress of medical science in the State during the year.

Of the forty-eight articles which make up the volume before us, all but the last eight are papers laid before the Society, the remainder being the record of the Annual Meeting, with various lists of members, &c.

The first article is the Annual Address of the President, Dr. Thomas Hunn, on the degree and kind of influence which the progress of medical science during the present century has exerted over medical art. This is a sound and reasonable discourse, and exhibits a most just appreciation of the proper objects and limits of our art. Beginning with a cursory glance at the principal discoveries in medical science during the present century, the author proceeds to unfold and enforce the true doctrine of rational medicine as it is held by the leading minds of the profession at the present day, and which has indeed had its advocates from the earliest ages. In this connection he justly recognizes the influence of one of our most honored professional brethren here, in presenting its claims with new power to the profession of the present generation :—

"Within the last twenty-five years," he says, "this view has been revived with more precision of statement, and has derived support from the progress of pathology and of the natural history of disease. A remarkable essay on self-limited diseases was published by Dr. Bigelow, in 1835, which may be considered as the starting point of medical reform in this country, and since that time similar views have been advocated by Dr. Forbes, Dr. Holmes and others. In this essay, I have not so much the hope of adding anything material to the truths inculcated in those writings, as of presenting them in a somewhat different light, and thus reaching some minds which have not yet adopted them. Truths like these need not only to be stated, but also to be preached."

The author goes on to illustrate from some of the simplest processes in surgery the operations of the *vis medicatrix nature*, showing just how far the surgeon is able to assist these processes, and applying the same principles to the management of the more hidden operations of disease. We give his conclusion in his own words :—

"We are, after this long discussion, prepared to answer the question proposed in the commencement, what has been the influence of the progress of medical science on medical art? If by medical art we understand the employment of means for prolonging life, guarding against diseases, alleviating pain, and conducting diseases to a safe termination, then we may safely assert that its progress has been most satisfactory. But if by medical art we understand the power of arresting or curing diseases, then we must admit that its progress has been utter-

ly insignificant. The list of incurable diseases is longer now than it was a century ago, for medical science within that period has served rather to demonstrate the incurable organic lesions, on which many diseases depend, and to show how those diseases which are not of a mortal character pursue a determinate course and have a definite duration, than to furnish remedies; and hence it is that the study of pathology has a tendency to impair confidence in the power of medicines over the course of disease. Indeed the great practical advantage derived from modern science, lies precisely in the demonstration it affords of our inability to cure diseases, and of the irremediable nature of the lesions on which many diseases depend. By showing the necessary limits of our art, and the objects which are attainable, it saves us from vainly striving after impossibilities, and from neglecting the good we might do, and has thus placed the art on a sure foundation, and opened for it a career of indefinite improvement. As in the old fable, the sons who sought in the garden for the treasure promised by the father, failed to find what they looked for, but were enriched by the work they had done in turning up the soil; so our art has failed in its search after remedies, but in the course of the search has attained the object sought for, in another way."

The remainder of the discourse is devoted to sustaining the conclusion thus set forth. This is done in a most satisfactory manner, inspiring the reader with the fullest confidence in the author as a truly wise physician, who has learnt to place a very just estimate upon the proper position of the profession and the limits and scope of our art. The style of the address is very agreeable; it abounds in practical and pertinent illustrations, and cannot fail to be read with interest by all under whose notice it may fall.

The second article is an excellent paper on Hospital Construction, by Dr. Charles A. Lee. Its object is to show the great superiority of pavilion hospitals over all others. This is the plan now so extensively adopted in the United States Military Hospitals, with such good results. The paper is illustrated by ground plans of a number of the best modern European hospitals.

Passing over a paper on the Mechanical Treatment of Pott's Disease, by Dr. C. F. Taylor, which, however interesting it may be, has no special claim of novelty to recommend it, we come to one by Dr. E. S. F. Arnold, on Medical Provision for Railroads, being supplementary to a paper on the same subject presented by the author last year. We have already noticed somewhat at length the author's commendable efforts to bring about some action of the New York Legislature, by which such provision may be efficiently made. The great State to which that body gives its laws presents in the annual statistics of its numerous railroads such a fearful exhibition of loss of life and limb by railroad accidents, that one can only wonder that no such provision has been made long before this. Dr. Arnold recommends the organization of an association of the railroad companies of the State, which shall make up a guarantee fund of 100,000 dollars—

"Chargeable upon each road as to its passenger traffic; and to enable the association of railroads to meet casualties, the respective companies shall in their discretion be allowed to charge four tenths of a mill per mile to each passenger, or one cent for every twenty-five miles or distance within it, in addition to the usual fare. In return for this, each passenger is guaranteed, in case of death, \$5,000 to his heirs; in case of loss of a limb, or an incurable injury seriously interfering with usual occupations, \$5,000, and for minor injuries \$25 per week, provided that such payments shall not extend over fifty-two weeks. The association also undertakes to establish surgical stations, at distances of not over ten miles from any one spot, which shall be provided with suitable necessaries, and to appoint competent surgeons to attend them when required. This done, the railroad com-

panies are to be exempted from all liability on account of any accident to passengers."

To say nothing of this plan as a measure of humanity, by which the most prompt and effectual relief may be brought to the sufferer, Dr. Arnold clearly shows that as a measure of economy, by saving heavy damages at law, it strongly commends itself to the interest of railroad proprietors. As yet, we believe, the attempt to get a satisfactory bill through the legislature has failed. We hope Dr. Arnold will persevere in his efforts, and thus earn the credit of inaugurating a system which will not be slow in securing universal favor and adoption throughout the States.

Article VII. is an account of a new operation for Artificial Hip-joint in Bony Ankylosis, by Dr. Lewis A. Sayre. The history of two cases is given, in which the operation was crowned with success. It consisted in the ingenious removal of a section of bone from near the head of the femur, successfully removing the deformity and inconvenience of the ankylosis, and giving each patient a false joint instead. The paper is illustrated with a number of wood-cuts, and is a very valuable contribution to plastic surgery.

Article VIII. is made up of a series of documents, correspondence, &c., and the report of Dr. John Swinburne to Gov. Morgan, on his professional experience in the disastrous peninsular campaign. This is a most painful picture of the gratuitous suffering of the unfortunate wounded of our army who fell into the hands of the enemy during the terrible battles before Richmond, caused by the inhuman conduct of their captors. It is a black page in the history of the war, which is so full of records of the odious cruelty of the enemy with whom we are contending. The author also speaks of the surgical practice which came under his eye, and makes some excellent suggestions for securing the most efficient and skilful professional agency on the field of battle. This communication concludes with a valuable paper on Resection of Joints and Conservative Surgery, of some thirty pages, which want of space compels us to dismiss with the simple mention of it.

Passing over several papers worthy of notice, but which we are obliged to neglect, we come to a new method of treating club foot by plaster of Paris bandages. We must not omit, however, to thank Dr. Henry S. Downs, the author of paper No. XIII., for the heading of it. *Post-pharyngeal Abscess*, instead of *Retro-pharyngeal*, as is commonly written. The former seems to us to be unquestionably the more correct reading.

To return to the paper on Club Foot. This contribution is from Dr. Dewitt C. Enos, and gives a very ingenious application of the plaster of Paris bandage to the treatment of club foot, by which a radical cure is effected without any division of tendons. In a few words, the method employed is this: Strips of muslin are prepared, long enough to extend the whole length of the tibia and beneath the heel to the end of the toes, and nearly wide enough to embrace the whole limb. Five or six such strips are laid one above the other, with alternating layers of plaster of Paris, mixed with warm water to about the consistency of cream. These are applied behind the leg and beneath the foot, the edges being brought up on each side towards each other. A roller is next applied from the toes to the knee and back. The foot is then for-

cibly grasped and brought as nearly as possible to its normal position, and held there until the plaster sets. The process must be renewed from time to time until the foot is brought into the natural position. The paper is illustrated by several successful cases, and a good lithograph shows a very satisfactory condition of a limb which had been much distorted before the application of the bandage.

Article XX. is a history of two cases of Ovarian Dropsy successfully treated by iodine injections, by Dr. D. G. Thomas. Article XXIII. is an account of a very singular Gangrenous Affection of the Mouth and Fauces, observed at the U. S. Marine Hospital, New Orleans, by Dr. Rufus K. Browne, Surgeon in charge. No. XXXIV. is the communication from the Massachusetts Medical Society on the want of an ambulance system in the Army, and contains Dr. Bowditch's paper on this subject, read before the Boston Society for Medical Improvement. The subject was referred to a committee of the New York Society, in accordance with whose recommendation the Legislature passed a bill appropriating two hundred thousand dollars for the additional care of the sick, wounded and indigent soldiers. Article XXXVI. gives a complete list of all the regimental surgeons of the State of New York in the war of the rebellion. Notices of deceased members of the Society, with the record of the fifty-sixth annual meeting, &c., conclude the volume. We have been obliged to pass over a number of interesting and important papers for want of space to notice them. The whole volume is a valuable contribution to medical literature.

A word about the mechanical execution of this volume. It could not be much worse. The shabbiness of the paper on which it is printed may be accounted for, we suppose, by the fact that it is published as a Legislative document. This is a poor excuse; the members of the Society had better put their hands in their own pockets and pay for its publication themselves, rather than allow such a mean dress to cover such a worthy body. It would be well to hire a proof-reader also to correct the press. Never have we seen a medical publication so full of egregious blunders. Hardly a page can be turned without several such meeting the eye. Without any malicious search we find "illacus," "asterphytes," "gracillis," "tensor vagina femoris," "pectineus," "clurnated," "cordeia," besides various transpositions of letters, all in one paper. On another page, "facia lata" and "minnie" balls. On another, the phrase "adventition substance" occurs twice, "tendo Achilles" ditto, and, turning over, "atrophed" and "hypertrophed" appear in the same line, the former repeated below; "gastroanemii," "os calis." On the opposite page, "spinallis," "hemiscephalus," and so on. A paper on a case of prolapsus uteri has the latter word printed "utero" in its very title, in the second line "procidenta utero," and again "os utero." And so we might go on and fill a page with such blunders. We see "cervix uteri" in one place, "squalæ of diphtheria" in another; also "exsiccatum, alumnae," "abraid," "aneastheasia," "subphænaed." "*Panetis*" of the chest we confess puzzled us; and it was only after some reflection that we discovered it stood for *parietes*. The friends of Dr. Brown-Séquard will thank us, we hope, for suggesting that he is probably the gentleman referred to on page 84 as Dr. Brown Lequaree! Let us hope that another year the Empire State will not be so meanly represented in a

document which is intended as an annual record of the progress of medical science within her borders.

DEATH OF DR. GEORGE HAYWARD.—While the meeting of the Councillors of the Massachusetts Medical Society was in session yesterday, Dr. John Jeffries announced the sudden decease, within an hour, of Dr. George Hayward, of this city, by apoplexy. The abruptness of this announcement produced a profound impression upon the gentlemen present, many of whom were among Dr. Hayward's old friends and associates. A committee was at once appointed to recommend some action on the part of the Councillors in view of this sad event. After consultation, the committee reported as follows:

The committee appointed to consider what order should be taken in relation to the announcement just made by Dr. Jeffries of the sudden death, since the opening of this meeting, of Dr. George Hayward, former President of this Society, and for a long series of years an active and efficient member, recommend, that a committee be appointed to adopt such measures as may, on consultation with Dr. James Jackson, Dr. Jacob Bigelow, Dr. John Ware and the officers of this Society, and such others as they may please to consult, seem appropriate to this sad occasion.

The report of the committee was accepted, and its suggestions unanimously adopted. Drs. Dalton, Jeffries and J. Mason Warren were chosen a committee to act in accordance with its provisions.

The annual meeting of the Vermont Medical Society will be held at Montpelier on the 14th and 15th of October.

VITAL STATISTICS OF BOSTON.
FOR THE WEEK ENDING SATURDAY, OCTOBER 3d, 1863.
DEATHS.

	Males.	Females.	Total.
Deaths during the week	61	46	107
Ave. mortality of corresponding weeks for ten years, 1853—1863,	44.0	42.0	86.0
Average corrected to increased population	00	00	94.25
Death of persons above 90	0	1	1

Mortality from Prevailing Diseases.

Phthisis.	Croup.	Scar. Fev.	Pneumoa.	Varicla.	Dysentery.	Typ. Fever.	Chol. Infan.
18	4	1	5	1	4	4	13

DIED,—In this city, Sept. 30, Dr. S. Hamilton Keep, aged 30.

DEATHS IN BOSTON for the week ending Saturday noon, Oct. 3d, 107. Males, 61—Females, 46.—Abscess (abdominal), 1—apoplexy, 1—inflammation of the bowels, 1—congestion of the brain, 3—disease of the brain, 2—bronchitis, 1—cholera infantum, 13—consumption, 18—convulsions, 2—croup, 4—debility, 1—diarrhoea, 8—diphtheria, 3—dropsy, 2—dropsy of the brain, 3—dysentery, 4—epilepsy, 1—exhaustion, 1—scarlet fever, 1—typhoid fever, 4—disease of the heart, 3—infantile disease, 1—congestion of the lungs, 3—inflammation of the lungs, 5—marasmus, 7—old age, 2—peritonitis, 1—premature birth, 1—enlargement of the prostate gland, 1—suffocated (overlaid), 1—smallpox, 1—unknown, 5.

Under 5 years of age, 49—between 5 and 20 years, 11—between 20 and 40 years, 24—between 40 and 60 years, 10—above 60 years, 13. Born in the United States, 74—Ireland, 24—other places, 9.